

Investment in Health **Update: Alabama's Tobacco Quitline **Continues** to Save Lives (and Dollars)**

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Executive Summary

This report provides an update to the 2015 return-on-investment analysis (Dunlap & McCallum, 2015) of Alabama's state-run tobacco Quitline. As previously indicated, the Quitline continues to be a successful program, saving lives as well as (vastly) more dollars than are spent to run the program. The long-term outcomes of improved health and productivity that can be attributed to tobacco cessation translate into healthcare and economic cost savings by former tobacco users, the health care and government systems that support them, and industries that employ them.

Currently, Alabama's Quitline enrolls approximately 4,100 participants in a year, with a quit rate of 32.3 percent among participants who are successfully contacted for an independent follow-up survey six months after enrolling, and an intent-to-treat (ITT) quit rate (based on total number of enrollees) of 15.7 percent. At its current capacity, in a year's time, Alabama's tobacco quitline program helps approximately 602 tobacco users quit smoking. These successes save an estimated \$7.1 million per year in recouped medical and productivity expenses.

When this success is compared to the cost of the program, the return-on-investment (ROI) for funding the Quitline ranks high nationally. The current annual cost of providing Alabamians with quitline services is approximately \$938,000, amounting to less than one-seventh (approximately 13%) of the annual savings realized as a result of the program. The reported ROI for other state-run tobacco prevention and control programs typically ranges from \$1 to \$4 saved for every dollar spent; thus Alabama Quitline's annual ROI of \$7.57 is well above the savings reported by other similar programs.

Continuing to fund and expand the Quitline is in the best interest of the state of Alabama and its population. It is estimated that more than 8,800 tobacco users die each year in Alabama from tobacco-related causes and thousands more suffer from smoking-related illnesses. But these deaths and illnesses are preventable, and the Quitline is a tobacco control measure that is considered a "best practice" when it comes to the battle to combat the negative effects of tobacco use. While Alabama's tobacco prevention and control efforts may continue to be underfunded, ongoing support for the Quitline and plans for broadening its reach and enhancing its capacity can go a long way toward bridging the gap between what is available and what is desirable when it comes to improving the state's preventable death outlook.

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It has now been more than five years since the return-on-investment of Alabama’s tobacco Quitline has been examined (Dunlap & McCallum, 2015). At that time, it was clear that the investments made by the state in its Quitline were more than worthwhile, as the annual return in dollars saved alone was more than three times the cost of the program, while approximately 380 smokers quit their tobacco use each year. To ensure more recent data is available to tobacco prevention and control stakeholders and decision makers, the current report re-examines the costs, success rate, and associated savings of the program in the period between December 2018 and November 2019. This enables a snapshot of a full year of not only enrollment volume and cost considerations, but also of the outcomes (e.g., quit rates) during this time, as the follow up surveys used to gauge user success are conducted six months following treatment.

Alabama’s Quitline: The Investment

Tobacco use has direct and indirect financial costs for states, health insurers, employers, and the public (Dunlap & McCallum, 2018), in addition to causing more than 400,000 deaths per year nationwide. Therefore, effective state-run quitlines are valuable, both in terms of how many lives they save every year by helping tobacco users quit, and in terms of the dollars saved by tobacco users and the systems that surround and support them. Alabama’s telephone and web-based tobacco Quitline has a track record of success in its mission to provide cessation services to tobacco users who wish to quit (Dunlap & McCallum, 2015).

For the period between December 2018 and November 2019, the Alabama state-run Quitline operated with a total one-year budget for administration and operations of \$938,206, much of which was provided by CDC grant funding and Medicaid reimbursement. The majority of these costs represent those incurred by the Quitline vendor (Information and Quality Healthcare; IQH) for materials, counseling, and nicotine replacement medications provided directly to program participants. The remaining funds support the state management of Quitline data, media costs, and evaluation of program outcomes. On average, this equates to slightly more than \$78,000 per month of the Alabama Department of Public Health’s Tobacco Prevention and Control Program budget. Costs per user, calculated by dividing the annual cost of the program by the annual number of enrollees (approximately 4,100), are approximately \$229.

Alabama Quitline Costs per User	
Average cost per enrolled participant	\$ 229

Alabama's Quitline: Success Rates

The effectiveness of a tobacco quitline can be estimated utilizing data from follow-up surveys completed by program participants after completion of the program. For Alabama's Quitline, IQH employs follow-up satisfaction surveys that involve contacting willing program participants six months after their enrollment in the program. These surveys gauge not only participants' satisfaction with the program itself, but also the success of their quit attempts following receipt of its services. Not all potential participants can be reached; therefore, reported quit rates are considered rough estimates, as they represent only a sample of the Quitline participant population.

For the purposes of this report, Alabama Quitline outcome data for callers who enrolled in the program in the one-year period between December 2018 and November 2019 were examined. Quit rates of these callers were gathered during the six-month satisfaction survey following this period and thus represent data collected between June 2019 and May 2020. At follow-up, program participants were asked if they had "smoked any cigarettes or used other tobacco, even a puff or pinch, in the last 30 days." Those responding "no" are considered a successful quit.

The table below presents data on quit rates for these six-month follow-up telephone surveys. The ITT quit rate represents the quit percentage based upon the number of callers who agreed to be contacted for follow-up surveys (call attempts), regardless of their level of program participation. Because many of the program participants for whom a contact attempt was made could not be reached, the ITT quit rate, which treats these non-contacts as non-quits, is a very conservative metric and likely underestimates the quit rate. Therefore, the responder quit rate, which represents the percentage of program participants who have quit among those who were reached for follow-up, is also important to examine, although it is likely to be an overestimate. The responder quit rate is the metric recommended by the North American Quitline Consortium for reporting and comparing quit rates.

Alabama Quitline quit data-June 2019 to May 2020					
Participant Group	Call Attempts	Callers Reached	Number Who Quit	Responder Quit Rate	ITT Quit Rate
All callers	3847	1864	602	32.3	15.7

Overall, the ITT quit rate for all call attempts was 15.7 percent and the responder quit rate was 32.3 percent, as a total of 602 tobacco users who called the quit line between December 2018 and November 2019 were tobacco-free six months later. These results compare very favorably with those reported for other state quitlines, which generally report quit rates between 24.5

percent and 32 percent (Stead, et al., 2013). Also encouraging are comparisons between data from the current time period and those examined for the previous Alabama Quitline ROI report (Dunlap & McCallum, 2015). Five years ago, the Alabama Quitline boasted a similar responder quit rate of 37.2 percent and a significantly lower ITT quit rate of 8.7 percent, based on an estimated 380 quits per year. Thus, current data indicate a greater than 50 percent increase in the number of annual quits among Quitline users, compared to only 5 years ago.

Alabama's Quitline: The Return

Data reported above represent the financial costs of maintaining Alabama's state-run tobacco Quitline and the number of tobacco users who make use of the Quitline to quit smoking or using other tobacco products. To estimate the cost savings of investing substantial funds in a cessation program such as a quitline, the dollar amounts associated with the health care and lost productivity costs incurred by smokers and other tobacco users over and above what would be expected for non-smoking individuals must be considered. These costs represent savings, in dollar amounts, which can be expected as a result of a successful cessation program. Such estimates should include savings that affect not only individual tobacco users and their families, but also the larger communities to which these individuals belong.

For instance, estimates of the annual medical costs for individual smokers, over and above what would be expected for a non-smoker, have been calculated by numerous sources for numerous populations. These dollar amounts are not necessarily a direct burden to smokers themselves, but to the health care systems and the state and local governments that are responsible for covering the costs of their members' and constituents' health care expenses. Based on a recent report estimating these expenditures for Alabama, the dollar amount for direct medical expenses per person per year attributable to tobacco use, adjusted to 2019 dollars to enable direct comparison with the available quit data (U.S. BLS, 2021), is approximately \$6,929 (Dunlap & McCallum, 2018).

Most sources that estimate additional medical costs incurred by tobacco users also examine lost productivity costs, both in terms of losses due to premature death and in terms of direct losses due to absenteeism and reduced productivity while at work. One such study by Penn State University examined the potential benefits of smoking cessation for each state in the U.S. (Rumberger, Hollenbeak, & Kline, 2010). The benefit calculations included losses attributable to health care expenses and productivity losses associated with tobacco use. This analysis resulted in an estimated \$4,578 in lost productivity per smoker per year in the state of Alabama (workplace loss, \$1,362; premature death, \$3,216). Again adjusted to 2019 dollars (U.S. BLS, 2021), this estimate is now slightly higher at approximately \$4,864. Estimates such as these make it possible to quantify the monetary costs of smoking to individuals and to society, enabling

dollar-to-dollar comparisons of the costs of prevention and cessation programs to the costs of continued tobacco use.

The Return-on-Investment (ROI) Estimates for Alabama's State Quitline

When choosing whether to invest in a tobacco cessation program, it is advantageous for states to consider not only the value of the lives that are saved when tobacco users quit, but also the financial return on the state's monetary investment in the program. Return on Investment (ROI) is an economic measure used to compare the value of a program to the costs associated with implementing it. ROI can be calculated by dividing the financial benefit (return) of the state's investment by the cost of the investment. Published ROI for state-run tobacco prevention and control programs is generally between \$1 and \$4 saved for every \$1 spent (Campaign for Tobacco Free Kids, 2013).

To calculate the ROI for Alabama's Quitline, the information that is needed includes a) the effectiveness of the program (or how many users successfully quit tobacco use); b) how many dollars will be saved in health care costs and productivity indices for each successful quit; and c) the administrative and implementation costs of the program. As detailed above, Alabama's Quitline has an annual intent-to-treat quit rate of 15.7 percent and a responder quit rate of 32.3 percent during the period examined. This represents a total of 602 individuals who quit their tobacco use during a one-year period or 50.2 quits per month. This number is based only on those reached for the follow-up call, yielding a conservative estimate of the total number of successful quits. In other words, there were *at least* 602 Quitline participants who quit smoking within that time; among those who could not be contacted and those who did not consent to be called, there were most likely additional unreported successful quits. The cost per reported quit can be calculated by dividing the total annual cost of the program (\$938,206) by the estimated number of successful quits per year (602), yielding \$1,558 per reported quit for the period examined.

Alabama Quitline Costs per Quit	
Average cost per successful quit at 6 months	\$ 1,558

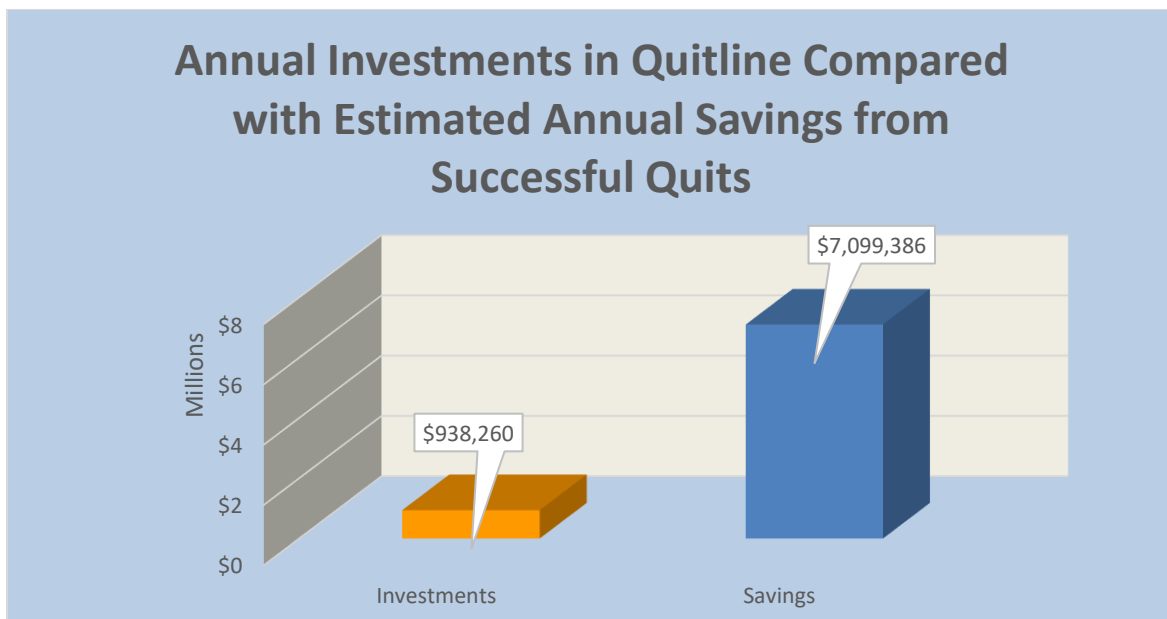
As detailed above, each Alabama smoker who quits represents an annual health care cost savings of approximately \$6929 per year, as well as \$4864 in productivity savings for a total amount of \$11,793 that could accrue per year for every smoker who quits, when expressed in 2019 dollars. Given these numbers, it can be estimated that Alabama's Quitline, which helps approximately 602 tobacco users quit in a given year, will save the state and its residents an average of \$7,099,386 per year, just in health care costs and regained productivity associated with major medical issues and deaths. Clearly, while not all Alabama tobacco users call the Quitline for help,

the number of callers who do quit translates to a significant cost savings for each year following those quits. By comparison, the cost of offering the service seems negligible.

Annual Costs and Savings for Alabama’s Tobacco Quitline			
Annual Costs		Annual Savings	
Total program costs per year	\$ 938,260	Total savings from enrollees who quit	\$7,099,386
Cost per quit	\$ 1,558	Savings per quit	\$ 11,793
Cost per enrollee	\$ 229	Health care cost savings	\$ 6,929
		Productivity loss savings	\$ 4,864

Note: Amounts are expressed in 2019 dollars

Using the budget period roughly aligned with the above detailed user data, the return on investment can be calculated, with annual costs of operating Alabama’s Tobacco Quitline totaling approximately \$938,260 (\$1,558 per successful quit), and future estimated annual savings of approximately \$7.1 million (\$11,793 per successful quit). For the one-year period examined, \$7.57 will be saved annually in medical and productivity costs for every \$1 that was spent on Alabama’s Quitline. This places the Quitline well above the ROI range (\$1-\$4) for tobacco prevention and control programs reviewed by the Campaign for Tobacco Free Kids (2013), and significantly higher than previously reported for Alabama (\$3.86 in 2015). The increase in estimated ROI can be attributed to changes in three factors since 2015: a substantial increase in the number of successful Quitline quits per year; a decrease in the cost per Quitline quit; and a large increase in the estimated health care cost savings for tobacco users who quit.



Amounts and calculations reviewed thus far have reflected the most straightforward data in the simplest terms. Fully examining all aspects of the return on investment for Alabama’s (or any) Quitline necessarily involves considering the more long-term outcomes of the program, as well

as those that can easily be quantified within a single snapshot of time, such as a one-year period. For example, some smokers who quit will relapse, reducing the savings that would be expected in the long run if all quitters continued to abstain from tobacco use. According to previous research (Hughes, Peters, & Naud, 2008), a 10 percent relapse rate for those who have quit at the six-month follow-up can be expected within one year of cessation. Applying additional declining relapse rates over a seven-year period, when the rate falls to 1 percent or less (Krall, Garvey, & Garcia, 2002), the number of successful Alabama Quitline users for whom data is reported here who can be expected to permanently abstain from tobacco falls from 602 to 475.

Additionally, long-term examination of cost savings that result from smoking cessation reveals how savings accumulate throughout each former smoker's lifetime. It takes an average of about seven years for full annual savings to be achieved (O'Donnell & Roizen, 2011), but after that point, these savings of health care costs and productivity losses will be realized each year of each former smoker's life. That is, in the seven-year period following a quit, annual cost savings increase from year 1 (\$1651), to years 2 (\$3302), 3 (\$4953), 4 (\$6604) and so on until, by year 7 the full savings (approximately \$11,793) is achieved, and the accumulated savings per former smoker equals \$46,228. The annual savings of \$11,793 continues in the years that follow.

If these two adjustments for expected relapse and gradual savings are both made to the ROI calculation, the return is somewhat reduced; however, the complete cost of treatment will be recouped during the second year following the successful quits of the individuals receiving services in the current cohort. All health care and productivity savings after that are positive returns on investment. By the end of the second year, annual savings (\$1.72 million) exceed the initial investment (\$938,260). By the seventh year, the accumulated savings would be \$22.72 million or \$24.21 for every \$1 spent in the year treatment was received. The annual savings in Year 7, when further relapse is minimal and annual savings have reached the full level, would be \$5.49 million, with an annual ROI of \$5.85 per \$1 spent in the treatment year. Thus, this more conservative approach also yields an ROI that is well above the typical range for state tobacco prevention and control programs.

Conclusions

Clearly, Alabama's state-run Quitline continues to be a good investment, both in terms of success rates for users and in terms of dollar amounts saved over the long term. As detailed above, Alabama's 1-800-QUIT-NOW program helps approximately 602 tobacco users quit smoking each year. This likely prolongs the lives of these individuals, while saving the state of Alabama in excess of \$7.1 million per year, several times over the cost of the program. As has been true in the past, the Quitline is worth every dollar spent and so much more.

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